

**ABSTRACT**

An electrode having a thermoplastic resin having gas permeability and a metal (3b) supported in a three-dimensional matrix form; an electrolyte composite having an electrolyte membrane (1) and a pair of electrodes (3), the electrodes (3) comprising a porous thermoplastic resin having gas permeability and a metal (3b) supported in a three-dimensional matrix form; a method of manufacturing an electrode (3) comprising plating a metal coating on surfaces of numerous particles (3a) of a thermoplastic resin, and pressurizing the particles; and a method of manufacturing an electrolyte composite having an electrolyte membrane (1), and a pair of electrodes (3), comprising manufacturing the electrodes (3) by plating a metal coating on surfaces of numerous particles (3a) of a thermoplastic resin and pressurizing the particles, and joining the electrolyte membrane (1) through the catalyst to one surface of each electrode and joining the electrolyte membranes, or joining the electrodes (3) through the catalysts (2) to opposite surfaces of the electrolyte membrane (1).